

## Health Update:

### Update 2: Mumps Outbreak in the Midwest

**April 17, 2006**

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The Missouri Department of Health & Senior Services (DHSS) is now using 4 types of documents to provide important information to medical and public health professionals, and to other interested persons:

**Health Alerts** convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

**Health Advisories** provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

**Health Guidances** contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

**Health Updates** provide new or updated information on an incident or situation; can also provide information to update a previously sent Health Alert, Health Advisory, or Health Guidance; unlikely to require immediate action.

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**Health Update**  
**April 17, 2006**

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**SUBJECT:** [Update 2: Mumps Outbreak in the Midwest](#)

This is an update to the following Missouri Department of Health and Senior Services (DHSS) documents:

DHSS Health Alert - "Mumps Outbreak in the Midwest" April 6, 2006  
([http://www.dhss.mo.gov/BT\\_Response/HAMumps4-6-06.pdf](http://www.dhss.mo.gov/BT_Response/HAMumps4-6-06.pdf))

DHSS Health Update - Update 1: Mumps Outbreak in the Midwest April 7, 2006  
([http://www.dhss.mo.gov/BT\\_Response/HUMumps4-7-06.pdf](http://www.dhss.mo.gov/BT_Response/HUMumps4-7-06.pdf))

On April 14, 2006, the Centers for Disease Control and Prevention (CDC) issued a new Health Advisory on the multi-state mumps outbreak which involves Missouri. The following is the text of this Health Advisory, with additional information specific to Missouri included in brackets.

The state of Iowa has been experiencing a large outbreak of mumps that began in December 2005 (1). As of April 12, 2006, 605 suspect, probable and confirmed cases have been reported to the Iowa Department of Public Health (IDPH) (IDPH, unpublished data). The majority of cases are occurring among persons 18-25 years of age, many of whom are vaccinated. Additional cases of mumps, possibly linked to the Iowa outbreak, are also under investigation in eight neighboring states, including Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, Nebraska, and Wisconsin (CDC unpublished data, April 14, 2006).

[In Missouri, as of April 17, 2006, 19 cases of mumps (7 confirmed, 10 probable, and 2 suspect) have been reported to DHSS. Two cases (1 confirmed and 1 probable) are listed as associated with Iowa cases.]

In addition, the Iowa Department of Public Health has identified two persons diagnosed with mumps who were potentially infectious during travel on nine different commercial flights involving two airlines between March 26, 2006 and April 2, 2006. The origin and arrival cities for these flights include Cedar Rapids and Waterloo, IA; Dallas, TX; Detroit, MI; Bentonville, AR; Minneapolis, MN; St. Louis, MO; Tucson, AZ; and Washington, D.C. (2).

The source of the current US outbreak is unknown. However the mumps strain has been identified as genotype G, the same genotype circulating in the United Kingdom (UK). The outbreak in the UK has been ongoing from 2004 to 2006 and has involved over 70,000 cases. Most UK cases have occurred among unvaccinated young adults (3). The G genotype is not an unusual or rare genotype and, like the rest of known genotypes of mumps, it has been circulating globally for decades or longer.

Mumps clinical manifestations and transmission

Mumps is an acute viral infection characterized by a non-specific prodrome including myalgia, anorexia, malaise, headache and fever, followed by acute onset of unilateral or bilateral tender swelling of parotid or other salivary glands (4). In unvaccinated

populations, an estimated 30-70% of mumps infections are associated with typical acute parotitis (4, 5). However, as many as 20% of infections are asymptomatic and nearly 50% are associated with non-specific or primarily respiratory symptoms, with or without parotitis (4).

Complications of mumps infection can include deafness, orchitis, oophoritis, or mastitis (inflammation of the testicles, ovaries, or breasts respectively), pancreatitis, meningitis/encephalitis, and spontaneous abortion. With the exception of deafness, these complications are more common among adults than children (4).

Transmission of mumps virus occurs by direct contact with respiratory droplets, saliva or contact with contaminated fomites. The incubation period is generally 16-18 days (range 12-25 days) from exposure to onset of symptoms (4, 6). Mumps virus has been isolated from saliva from between two and seven days before symptom onset until nine days after onset of symptoms (4, 6).

### Mumps Prevention

The principal strategy to prevent mumps is to achieve and maintain high immunization levels. The Advisory Committee on Immunization Practices (ACIP) recommends that all preschool aged children 12 months of age and older receive one dose of measles-mumps-rubella vaccine (MMR) and all school-aged children receive two doses of MMR, and to ensure that all adults have evidence of immunity against mumps (5). As noted below, two doses of mumps vaccine are more effective than a single dose. Consequently, during outbreaks and for at-risk populations, ensuring high vaccination coverage with two doses is encouraged. For example, health care workers may be at increased risk of acquiring mumps and transmitting to patients and thus should receive two doses of MMR vaccine or provide proof of immunity. Since vaccination is the cornerstone of mumps prevention, public and private health entities concerned about spread of mumps in a population can review the vaccination status of populations of interest and work to address gaps in vaccination.

### Mumps Vaccine Effectiveness

Data from outbreak investigations have shown that the effectiveness of MMR against mumps is approximately 80% after one dose and limited data suggest effectiveness of approximately 90% after two doses. Available evidence suggests that mumps vaccination should provide immunity against the genotype G virus responsible for the current US outbreak. A study of a 2005 New York outbreak that began with imported disease from the UK (7), demonstrated vaccine effectiveness in the expected range for both one and two doses (New York, unpublished data). However, since the vaccine is not 100% effective, some cases can occur in vaccinated persons. When a highly-vaccinated population is exposed to disease, most cases of disease would be expected to be among vaccinated persons. Mumps vaccine has not been shown to be effective in post-exposure prophylaxis and an interval of 2-4 weeks after vaccination may be required for the vaccine's full immunogenicity to be achieved. For these reasons, and because of the mumps' incubation period of 12-25 days, during an outbreak, newly-vaccinated persons may develop mumps disease as long as a month after vaccination (4, 5).

### Control of mumps outbreaks

The main strategies for controlling a mumps outbreak are to define the at-risk population and transmission setting, identify and isolate suspected cases, and to rapidly identify and vaccinate susceptible persons or, if a contraindication to MMR vaccine exists, to exclude susceptible persons from the setting to prevent exposure and transmission. Specific strategies are listed below.

1. Offer MMR vaccine to persons without evidence of immunity. Evidence of immunity includes physician diagnosis or laboratory evidence of mumps infection, birth before 1957 or one dose of MMR vaccine. For pre-school aged children, the first MMR dose should be administered as close to age 12 months as possible. Although birth before 1957 is usually considered proof of immunity, during an outbreak, vaccination can be considered for this age group if the epidemiology of the outbreak suggests that they are at increased risk of disease. Since two doses of MMR vaccine is more effective than one dose for preventing mumps, a second dose of MMR vaccine is recommended for the following groups: health care workers, school-aged

children, students at post-high school educational institutions and other age groups considered at high risk of exposure (5, 8). [Specific recommendations from DHSS for health care workers are provided in the April 6, 2006, Health Alert ([http://www.dhss.mo.gov/BT\\_Response/HAMumps4-6-06.pdf](http://www.dhss.mo.gov/BT_Response/HAMumps4-6-06.pdf))]

2. Surveillance for mumps should be enhanced in all affected areas for persons with parotitis or other salivary gland inflammation. Enhanced surveillance should continue for 50 days (two times the maximum incubation period) after the date of illness onset in the last identified case. CSTE approved case definitions and case classifications for mumps are available (5).
3. Persons with suspected mumps should be tested and reported immediately to local public health officials [or to DHSS at 866-628-9891, or 800-392-0272]. Information on collection and testing of clinical specimens for mumps will be available by Monday April 17, 2006 at <http://www.cdc.gov/nip/diseases/mumps/mumps-lab.htm>. Testing is essential as not all cases of parotitis are mumps, although mumps is the only known cause of epidemic parotitis. [As indicated in the April 7, 2006, Health Update, medical providers should normally use private laboratories for testing. (The Missouri State Public Health Laboratory is a reference laboratory and should generally not be used to diagnose individual cases of mumps.) Appropriate specimens should be sent for both serological testing and virus isolation according to criteria specified by the particular laboratory.]
4. Persons suspected of having mumps should be isolated for nine days after symptom onset (5, 6). In health care settings, the use of respiratory precautions is recommended (5).
5. Exclusion of persons without evidence of immunity to mumps from institutions such as schools and colleges affected by a mumps outbreak (and other, unaffected institutions judged by local public health authorities to be at risk for transmission of disease) should be considered. Once vaccinated, students can be readmitted to school. The period of exclusion for those that remain unvaccinated should be for at least 25 days after the onset of parotitis in the last person with mumps in the affected institution (5, 6).

Additional information on mumps and the prevention and control of mumps outbreaks, including vaccination, can be found at the following website: <http://www.cdc.gov/nip/diseases/mumps/mumps-outbreak.htm>.

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General questions on mumps, as well as questions on mumps testing, can be directed to your local public health agency (LPHA), or to DHSS at 573/751-6113. Questions on mumps vaccine can also be directed to the LPHA, or to DHSS at 573/751-6124.

#### References

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4. Plotkin, SA, Orenstein WA, et al. *Vaccines, 4<sup>th</sup> Edition*, 2003, p.441-5.
5. CDC. Measles, Mumps, and Rubella -- Vaccine Use and Strategies for Elimination of Measles, Rubella, and Congenital Rubella Syndrome and Control of Mumps: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 1998; 47(RR-8);1-57.
6. Red Book: *2003 Report of the Committee of Infectious Diseases*, American Academy of Pediatrics, pp 439-443.
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8. *Vaccine Preventable Diseases Surveillance Manual, 3<sup>rd</sup> Edition*, 2002, p. 7-1 - 7-12.